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An Assessment of the State of Environmental Management in Nigerian Capital Cities

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Authors' contributions

This work was carried out in collaboration between both authors. Author POA designed the study, performed the statistical analysis, wrote the protocol as well as the first draft of the manuscript while Author AAO managed the theoretical analyses of the study, edited the first draft and conducted a few other literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

It has been observed that daily interaction of millions of Nigerian population estimated at 186.5 million by Population Reference Bureau (PRB) with their immediate environment have serious implications on the landscape, environmental aesthetics and atmospheric well-being. Urban decadence, proliferation of slums, deforestation, congestion and all forms of pollution are some of the resultant effects of man's interaction with his environment which results in adverse effects on Nigeria major cities. Increased industrial activities have engendered more carbon emission in the country, which it is estimated at 26.1 million tons per annum, the fourth highest in Africa. This paper examines the state of environmental management in the state capital cities of Nigeria in the light of five research-proven indicators of environment-friendly cities. The paper applies qualitative method using the indicators to examine which state capital is really environment-friendly out of the thirty seven (37) in Nigeria, including the Federal Capital Territory (FCT), Abuja. Results show that only five (5) state capitals out of the thirty seven (37) in Nigeria can be referred to as being environment-friendly. The study outlines notable recommendations capable of stimulating the attention and enhancing the efforts of less environment sensitive cities in adopting global best practices.

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1. INTRODUCTION

In 2011, the world population hit 7 billion according to Population Reference Bureau (PRB) [1]. The world is undergoing the largest wave of urban growth in history: already, over half the world's population is living in towns and cities, and by 2030 it will increase to 5 billion, with urban growth concentrated in Africa and Asia [2]. Africa is currently experiencing the highest rate of urbanization, with a four-fold increase in urban dwellers and anticipated to reach 500 million people by year 2020 [3]. Nigeria's situation is in accord, according to 2006 Census, more than seven cities in Nigeria have population exceeding 1 million while the population of its two largest metropolitan cities; Lagos and Kano, are currently over 9 million each.

Furthermore, the proportion of population living in urban centres in Nigeria rose from 15% in 1960 to 43.3% in year 2000 [4]. This rose to 48% and 50% in 2006 and 2013 respectively and projected to reach 60% by the end of 2015 [1,3]. The number of urban centres in Nigeria with population of 20,000 or more increased from 56 in 1953 to 359 in 1991 and 450 in 2000 [5]. Presently, there are more than a thousand of Nigeria settlements with over 20,000 inhabitants [4]. Since the city is regarded as the engine of growth which propels national economic development; the problems emanating from cities' uncontrolled population have undoubtedly constituted critical challenges to sustainable urban development. A recent UN Report on Nigeria indicates that the annual urban population growth rate is 5.8%, resulting in a total urban population of 62.66 million or 43% of the total population [6].

These explosive rates of growth have not only progressively complicated and exacerbated inter-related problems of human settlements and environment, but have also greatly accelerated poverty [7,8,9,10]. It also exacerbates environmental concerns reflected mainly in rising energy poverty through extensive use of dirty energy sources for production and domestic consumption [11]. That is why poverty once known with country side or local environments in Nigeria is now also visible in towns and cities. Also, with population density of 549 persons per square kilometer of arable land in 2016 and

carbon emissions of 26.1million tons as of 2013 (the highest in West Africa), Nigeria remains one of the deadliest and most environment-unfriendly places for human habitation [12]. As a matter of fact, only three countries: South Africa (128.5 million tons), Egypt (58.1million tons) and Algeria (36.6million tons) release more carbon into the atmosphere than Nigeria in the Africa [12].

Moreover, the less attractiveness of the agricultural sector following the discovery of oil in commercial quantities in 1970 enhanced the swiftness of rural-urban migration, hence contributing to urban congestion in the Nigerian cities. The overstretched rural-urban migration contributed to the expansion of slum dwellers in Nigeria cities; of which 40 to 60 percent are without adequate sanitation facilities and vulnerable to sanitation-related diseases due to exposure to ill-managed human wastes [7,13,14]. The numerous challenges faced by Nigerian cities worsen due to uncontrolled urbanization, deteriorating environment, urban decay, un-cleared refuse, flooding, erosion, pollution of all forms inter alia. This densely congestion exerts pressure on the environment limited economic resources as people search for means of livelihood. Also, developmental activities in cities worsen due to increasing deforestation. All these have dire consequences on the health and socio-economic wellbeing of the people.

The expansion of cities results in increasing economic activities – consumption and income tends to rise which is the attracting force rural-urban migration. Asides internal migration, foreign capital and industries are attracted to fast moving developing areas. This movement of capital, labour and industries have often worsen environmental concerns at the initial stages of development, this led to the emergence of theoretical strands captured within two prominent expositions which include the Pollution Haven Hypothesis and the Environmental Kuznets Hypothesis. These two expositions emphasized the link between economic expansion and environmental quality. The Pollution Haven Hypothesis posits that often times, highly pollution intensive industries migrate from developed economies to developing countries due to the latter less strict environmental regulation and weak enforcement of environment abatement. This coupled with the dense

population in African cities has worsen environmental quality, leading to the refuter of the EKC hypothesis – implying average income has not grown enough to overcome basic environment concern of an average African. In the wake of the global call for sustainable development – with a prominent anchor on environmental sustainability, evaluating environmental management procedure and practices are critical global and national concerns for emerging cities and African economies, where political institution will are relatively weak [15].

Human beings use the environment in three basic ways. One, as a resource bank – the environment supplies them with raw materials needed to maintain their existence as well as their social and technological structures. Two, as a habitat – people require more space per individual than any other species and three, and thirdly as sink for wastes – human beings produce more waste than other species [3,16]. As people migrate to towns and development expands, these three important uses of the environment manifest in various dimensions both positively and negatively. The most common challenges of rapid urban growth in Nigeria include urban congestion, increase in crime waves, unemployment, massive deforestation, increase in industrial activities leading to increasing greenhouse effect and particularly environmental degradation which is the thrust of this paper. When urban centres grow without proper planning, it causes growth of slums.

Among many others, a typical environmental challenge in slums is flooding. Nigeria has experienced series of flooding in recent times. On 2nd July 2012, many Nigerian coastal and inland cities experienced heavy downpour for several hours and residents of Lagos were gasping for breath due to the flooding that ensued. There were gridlocks on major roads, causing people to cancel or postpone appointments due to inability to move and thousands of stranded commuters had to pay increased fares to the few bus drivers who were willing to risk travelling on the roads. Also in July 2012, flooding in Ibadan metropolis caused some residents of popular quarters which were badly affected such as Challenge, Oke-Ayo and Eleyele to flee their residences in order to save their lives while a few bridges collapsed. At least 39 people were killed this same July 2012 due to flooding in Jos, the capital of Plateau State. Heavy rainfall caused the Lamingo Dam near Jos

to overflow sweeping across a number of neighbourhoods and approximately 200 homes were submerged while roads and bridges were washed away, obstructing relief efforts. Over 12,000 people were affected by the flooding in six districts of the State, while hundreds were rendered homeless. Besides destruction to lives and property, flooding pollutes water table which may cause outbreak of epidemic such as cholera [17]. All these are unnecessary evils that can simply be avoided if there is proper environmental management, especially good drainage system and proper waste disposal. Series of illegal buildings in unapproved places and careless disposal of solid wastes exacerbated the effect of the flooding. Also, if there are proper environmental management measures and enforcement, Nigeria may not have suffered as such from the nasty effects of flooding as we have today.

From the foregoing, being environment-friendly in the present day Nigeria is not negotiable as the consequences of improper environmental management are too dire to be imagined. There are numbers of cities in Nigeria, but this paper focused on state capitals, including the Federal Capital Territory (FCT), Abuja. These serves as proxy for how other cities in Nigeria should be managed. None of the cities considered has less than a million population and the preceding discussions in this revolve around them. The main objective of this paper is to find out the state of environmental management in Nigeria state capitals and ascertain how environment-friendly Nigerian cities are based on certain carefully chosen and research proven criteria identified by the authors. This will serve as a springboard for other cities in Nigeria who want to access the state their environment from the excruciating effect of urban congestion.

2. FACTORS FACILITATING ENVIRONMENTAL DEGRADATION IN NIGERIA

Taking issues of environmental management serious is a recent development in Nigeria. Issues relating to environmental consciousness started in the 1970s during General Buhari/Idiagbon's military rule. The regime started War against Indiscipline (WAI) in 1977. People all over the country would stay indoors and take care of their immediate environment and clear their drainages every last Saturday of the month between the hours of 7 am and 10 am before going out. Except those on essential duties such as military men or medical personnel

on emergency cases, all vehicular movements and commercial activities are suspended between 7 am and 10 am to allow for this very intensive cleaning. Most states of the federation did not initially take this seriously until some form of enforcements commenced. However, the paradigm shift in environmental sanitation now in Nigeria is that it is no more a monthly routine; rather, it is now a daily household decision to see that one's environment is clean. Various forms of environmental sensitization programs and jingles from the government and Non-Governmental Organizations (NGOs) now air almost daily in the media which propel people to take care of their environment every day and also conserve the grassland to prevent sheet and gully erosions so that we can all live in green and aesthetic environment.

This review is based on causes and the effects of environmental degradation in Nigeria capital cities. Over 50% of Nigerians now live in cities and this is expected to increase to 60% by year 2025 [18]. People want to live in cities and enjoy all the associated benefits nowadays more than ever. In a bid to do that, Nigeria cities are becoming degraded as their capacities are being stretched beyond their carriage [3]. Certain factors stimulate cities degradation and poor environmental management in Nigeria capital cities; two of which will be discussed in this section. Number one of such is excessive rural-urban migration. In search of employment opportunities, comfort, business and higher standard of living, people move en-mass into capital cities in Nigeria. Push factors from rural areas and pull factors in urban areas make large number of people to leave rural areas every day not only in Nigeria but generally in developing countries, especially in search of jobs [19,20,21].

This is also aggravated by recent creation of new state capitals with massive influx into their capitals which contributed immensely to urban decay, as the resources available were stretched beyond their carrying capacities. Towns such as Yenagoa, Ado-Ekiti, Gusau, Abakaliki, Jalingo and Dutse were relatively semi-urban before they emerged new state capitals and had their population doubled within a decade as a result of rapid urbanization. Transport system and service provision took a new turn as new roads were constructed and old ones rehabilitated and/ or expanded to accommodate the current surge in the volume of traffic and travellers. Research has shown that transport improvement encourages population explosion as towns grow along main

routes [22]. Many capital cities in Nigeria cannot cope with this supersonic speed of growth as resources are not correspondingly expanded thereby leading to environmental degradation and growth of slums.

In an attempt to justify the preceding evidences, extant studies observe the growth pattern of Nigeria's five main mega-cities since 1991 and the results were alarming. Chart 1 shows the population size of the five (5) biggest megacities in Nigeria according to 1991 and 2006 population censuses. It also shows the 2013 estimates and a projection into year 2050 based on the population growth rate of 2.8% annually [1]. At a constant growth rate of 2.8%, these megacities will more than double their present population by 2050.

From Chart1, if the present growth rate persists; Kano, Lagos and Abuja will add approximately 18.3 million, 18.1 million and 3.3 million respectively to their present population by year 2050. The critical question is what becomes of these cities if there are no corresponding increase in food production, manufacturing, service provisions and especially environmental management? If government does not expand the economic base of these cities to correspond with their population growth and environmental needs; poverty and hunger will surface in stiffer degree. Every massive outmigration has implications for the rural and urban areas, this bordered mainly on productivity, food shortages and dwindling per capita income which, in no doubt culminates into poverty.

Secondly, industrialization is another critical stimulant of environmental degradation in Nigeria due to what it attracts and level of environmental consciousness in the operations. Agglomeration of industries in an urban centre is a pull factor for labour (mostly able-bodied young folks) from surrounding local communities to the centre because industries require large labour. This is why Lagos and Port Harcourt keep growing because they are the most industrialised cities not just in Nigeria but also in the entire West Africa. Lagos Metropolitan City is a home to many manufacturing, service, telecommunication and chemical industries. It also has the busiest port (Apapa Port) in West Africa. Additionally, until very recently when many banks began to move their headquarters to Abuja, many of them used to have their headquarters in Lagos. All telecommunication companies in Nigeria (MTN, Globacom, Etisalat, Airtel and others) have their

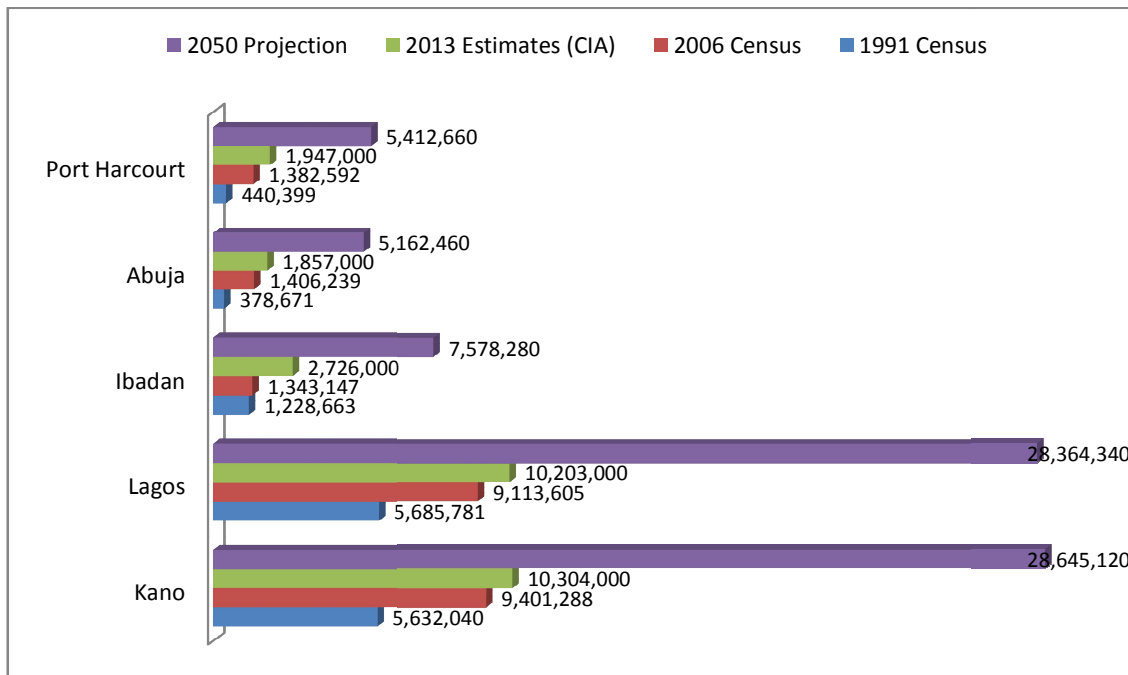


Chart 1. Nigeria megacities and trends of population growth, 1999-2050

Sources: a) Federal Government of Nigeria, Official Gazettes, 1992 & 2009

b) 2050 Population is Authors' Projection based on the growth rate of 2.8% per annum

international headquarters located in Lagos. All these explain the provocative influxes into Lagos as young folks come from rural areas searching for jobs. Port Harcourt on the other hand is home to many oil companies in Nigeria. Shell, Chevron and others have their operation main base in Port Harcourt besides Eleme Port which is the second-largest Port and also one of the busiest in Nigeria and West Africa. Cities like these can't escape massive influxes of both skilled and unskilled labour which may subsequently lead to overpopulation.

This consequently causes urban sprawl, congestion, environmental degradation as the cities do not have enough decent accommodation to cater for the daily influx. That is why urban residencies in Nigeria metropolitan cities like Lagos, Ibadan, Port Harcourt and Abuja have been unconsciously separated into three tiers of living residencies. There are quarters for high income earners, middle income earners and low income earners in line with what [19] discovered in Ibadan. These low income residencies are usually the urban slums where housing is relatively cheap for average Nigerians who live on less than 1.25 dollars per day. Oshodi, Ajegunle and Apapa Olodi are a good example of this in Lagos while Beere and Oje typify this in Ibadan.

3. EFFECT OF POPULATION INCREASE AND ENVIRONMENTAL DEGRADATION IN NIGERIA

A few of the contemporary challenges facing Nigeria cities as a result of uncontrolled rural-outmigration are environmental hazards, environmental pollution and growth of slums which are briefly discussed here. Two key features of unplanned cities in Nigeria, especially Ibadan and Kano are poor drainage and poor waste management system [23]. This results in flooding and erosion which are two key devastating environmental hazards in Nigeria during every raining season [19]. While flooding has devastating effects on buildings and other properties, the effect of erosion is felt more on arable land especially in eastern Nigeria. Degradation caused by erosion in Nigeria is occurring at an increasing and alarming rate, aggravated by factors such as increased agricultural activities, civil construction works, deforestation, bush burning, over grazing, drainage blockage, poor water management, urbanization and increased population pressure [3,24]. Also, damaged drainages make rainwater to flow without proper channelization. This is aggravated by improper garbage disposal that usually obstructs natural flow of water which

consequently results in flooding. Sometimes, the greater damage is not even to buildings; rather, to drinking water sources. Ibadan and some other settlements in Kwara, Benue, Plateau and Ogun States will forever count their losses on the account of the flooding which washed away many farmlands, destroyed properties worth of millions of naira and in which more sarcastically, many people lost their lives including women and children between June and July 2012. That was the worst flooding in Ibadan besides the Ogunpa flooding over four decades ago.

Another effect of uncontrolled urban population in Nigeria is poor housing and growth of slums. Population bomb currently bedeviling major cities in Nigeria in recent times has caused diverse urban problems like overcrowding, deplorable environment, poor living condition, poor infrastructure and homelessness among several others [19]. Until very recently when the administration of Governor Babatunde Raji Fashola paid critical attention to the condition of Oshodi, Lagos, it was then a gory site to behold. Heaps of solid wastes in tons used to scatter all over, rickety buses packing passengers like corpses; very elastic traffic gridlock, proliferation of garage boys and thugs and every form of social vices were the order of the day at Oshodi before the intervention of Fashola's administration to give the place a face-lift. Massive influx of people into towns together with poor attitude of most state and local governments toward environmental management and waste disposal is what causes environmental ugliness. Since Nigeria capital cities especially these five metropolitan cities employ almost 80 per cent of all white-collar jobs in Nigeria, this has aggravated housing challenges in cities as a result of rapid population growth. Housing inadequacies, particularly for the low income earners, has been complicated by inflated real estate values, influx of rural in-migrants, deplorable urban services and infrastructures, and a lack of implementation of planning policies.

The federal government has at sundry times been massively involved in housing issues. Several housing laws and acts have been promulgated which include: Employees Housing Scheme (Special Provision) Act (Cap 107); Land Use Act 1978; Mortgage Institutions Act, 1989 (Cap 231); Federal Housing Authority Act, 1990 (Cap 136); and National Urban Development Policy of 1997, among several others [21]. The housing reforms also involved

the establishment of the Federal Ministry of Housing and Urban Development in July, 2003 which was saddled with the responsibility of adequately addressing the complex problems of the urban sector. Also, as part of the efforts to bring about further restructuring, a new Federal Ministry of Works and Housing has recently been created. Yet, housing challenge in Nigeria urban centres is still enormous. The involvement of the public sector in housing in Nigeria has been more of policy formulation than housing delivery. As identified by [8], urban housing challenge in Nigeria does not rest on lack or absence of policies but on ensuring an appropriate operational framework for its implementation. It also lies on imbibing the right political will, economic determination and organized democratic approaches in the resolution of the housing crisis. Decent accommodation in Lagos, Abuja and Port Harcourt for instance costs a lot of money. Many urban poor are either partially destitute or make do with living in slums which are relatively cheaper but can have serious health consequences because of poor environment, especially indecent waste disposal. Research has confirmed that poor and dirty environment contribute to higher infant mortality [19].

Poor environmental management and excessive urban congestion will definitely cause environmental pollution. Environmental pollution is a serious challenge in major urban centres in Nigeria. The primary causes of this include poor sanitation, poor solid waste disposal, effluent discharge, rapid and unplanned urbanization, mining, and increasing use of chemical fertilizers and insecticides. Surface runoffs collect different garbage including human faeces and these are moved into rivers, dams and sometimes into wells [3]. In fact until very recently, poor waste disposal is perhaps the most serious environmental challenge in Nigeria. This makes some Nigerian cities very dirty and unattractive with very offensive stench emanating and spreading from scattered refuses around towns.

The increasing accumulation of refuse in cities forms breeding grounds for various diseases-causing germs such as mosquitoes known to be the primary transmitter of malaria [19]. The health hazards posed by rain water mixing with waste and percolating through porous soil are enormous, ultimately contaminating ground water which forms the prime source of drinking water for many cities in Nigeria. Also, industrial wastes represent a special category of urban

environmental problems. Textile plants, breweries, slaughterhouses, sugar refineries, pulp and paper plants and petroleum industries discharge raw, untreated and often toxic liquid effluents into open drains, channels, streams and lagoons [3]. Such toxic and non-toxic wastes degrade the land and render most surface and underground waters around urban areas unsafe for human, agricultural or recreational use. This is the typical challenge faced in many places in Niger Delta region of Nigeria where intensive oil exploration activities are on twenty four hours a day. Their water table is polluted making availability of safe drinking water a major challenge. That is why water supply especially for drinking is costly in that whole region especially at state capitals.

Air pollution on the other hand is caused by oil production and gas flaring through the release of toxic gases such as methane, carbon-monoxide, sulphur-oxide, nitrogen oxide, etc. into the atmosphere and when mixed with atmospheric moisture, it releases acid rain. Besides, there are other consequences ranging from respiratory illness, skin problems and crop contamination caused by this. The damages attributed to the natural gas industry have particularly high costs, especially for residents of the Niger Delta [25,26,27]. United Nations Commission on Sustainable Development reported that; Nigeria has about 5,000 registered industrial facilities and some 10,000 small scale industries operating illegally within residential premises [28]. In metropolitan cities like Kano, Lagos and Port Harcourt; coloured, hot and heavy metal-laden effluents especially from textile, tannery and paints industries are discharged directly into open drains and water channels, constituting direct dangers to water users and biota downstream [3]. Many factories located on river banks use the rivers as open sewers for their effluent, especially in the Niger- Delta. The petroleum industry represents the greatest threat to water quality in the Niger-Delta Region of Nigeria especially in Port Harcourt.

4. METHODOLOGY

4.1 Sources of Data

This is an empirical and exploratory research. So data for the paper were derived mainly from a combination of extensive search of literature and empirical surveys. A personal reconnaissance survey and later serious and in-depth physical visit to all the states capitals discussed in this

paper was undertaken by the lead author. That afforded us the privilege to assess facilities on ground based on the research-proven criteria we set on what an environment-friendly city should have. We also made use of some secondary materials most of which are cited in various sections of this paper to back up our claims on what an environment-friendly city should look like.

4.2 Study Area

With the current population of approximately 186.5 million people (PRB, 2016), Nigeria is the most populous Black Country in the world. It is located on longitudes 3⁰ and 15⁰ East of the Greenwich meridian and latitudes 4⁰ and 14⁰ north of the equator. Nigeria is bounded in the north, west, east and south by Niger Republic, Benin Republic, Republic of Cameroon and Atlantic Ocean respectively. Nigeria population grows annually at 2.5 per cent [18]. Nigeria has 36 state capitals plus Abuja, the Federal Capital Territory making 37. The focus of the study is on the state capitals in Nigeria which include: Lagos, Kano, Port Harcourt, Ibadan and Abuja.

4.3 Selection Criteria

Guided by existing empirical and theoretical literature [3,24,6,13,16,14] authors carefully selected five (5) main indicators of an "environment-friendly" city with which we mirrored Nigeria state capitals to see which of them were qualified to be called as such. We referred to the indicators collectively as FCP-facilities, culture and practices of an environment-friendly city. For a city to be termed environment-friendly; these facilities, culture and practices must be available and must be imbibed by all residents. These indicators are: An effective and efficient Waste Management Board (WMB), a non-moribund ministry of environment, embracing effective horticulture and greening of the environment, an effective and efficient transport management agency/authority and a central and well-managed motor park where passengers load and offload.

5. ANALYSIS AND DISCUSSION

All discussions in this paper are based on these indicators with respect to Nigeria state capitals, especially the five biggest metropolitan cities. The state of environmental management in Nigeria state capitals and other cities were qualitatively analysed in the light of the above

carefully chosen indicators. State capitals and other cities that satisfy the criteria are regarded as environment friendly. Our analyses are purely descriptive as discussions are based on on-ground facilities from our investigative survey. The criteria are analysed and discussed briefly in relation to the state capitals.

5.1 Effective and Efficient Waste Management Board (WMB)

Having an effective and efficient waste management board is a sign-qua-non to achieving a clean environment. Research has shown that settlements that are environment conscious are keen in ensuring an effective WMB [14]. Lagos, Benue and Kwara States are front liners in this essential service-oriented board in Nigeria (See Fig. 1). Abuja municipal waste management board also ensures that daily parking of solid waste around town for onward recycling. In addition, most states in the Southeast though have this ministry but are not very efficient.

5.2 Non-moribund Ministry of Environment

Ministry of environment in many states in Nigeria are mere a bunch of workers who are mainly concerned about collecting salary at the end of the month. In fact, besides Lagos State, Kwara State, Niger State and FCT (Abuja) most other ministry of environment can be described as 'moribund'. This ministry among other functions should ensure consistent cleaning of the environment, ensure that solid wastes are moved to the appropriate place for recycling (See Fig. 2) or buried, clean city drainages for free flow of water, ensure that city roads, especially access roads are in good condition and so on. However, there are ministries of environment where these functions are not reflected in their immediate vicinity let alone other cities within a state. Apart from Lagos State which can be rated at the best state in Nigeria in this regard, Oyo State ministry of environment is putting up her best in the last few years but the resources available is not commensurate to the volume of work in Ibadan being the largest city in West Africa.

5.3 Embracing Effective Horticulture and Greening of the Environment

For any state that will be called environment-friendly, horticulture and greening can never be over-emphasized and this is where states like

Lagos, Oyo and FCT have the edge. This is reflected in the United Nations in the Sustainable Development Goals (SDGs) 11 (eleven) which advocates building inclusive, safe and sustainable cities and human settlements for all citizens. Effective horticulture and greening should be implemented in all states in Nigeria if this is to be achieved. Greening implies that recreation areas should be preserved and kept green for its purpose while trees should be planted to provide shade in major streets in cities as well as serving as cover to buildings during heavy rainfall and strong wind. Lagos, Ogun and Oyo States invest a lot of millions in this regard in the last few years as well as the FCT. Nasarawa State has geared up recently in this regard as the present administration invested several millions in tree planting. In fact, in some states, it is a crime to tread on flowers or cut down trees in town. However, most states have not done enough to qualify for being referred to as environment-friendly especially states in the Southeast and Northwest.

5.4 Effective and Efficient Transport Management Agency/authority

Having an effective and efficient transport management agency is closely linked to having a good environment (See Fig. 3). If vehicles are allowed to load and off-load passengers at any time and in any place within a city, it will not only be polluted but also be rowdy [22]. A city without effective transport management will be a noisy and unfriendly, as air and noise pollutions will be the order of the day [24] has linked this essential service to contribute to urban slum if not properly managed. This is where Lagos, Niger and Benue States rank the highest in the country because they have the best transport management board in Nigeria and that is why Makurdi and Minna rank high among the cleanest cities in Nigeria. States such as Imo and Abia in the Southeast are also doing well in this regard, but states in the north and Southwest need to intensify efforts in this direction, especially Ogun State.

5.5 A Central and Well-managed Motor Park

Loading and offloading goods and passengers anywhere in town is one of the highest indicators of urban pollution, congestion and ugliness in many big cities of Nigeria [3,24]. Lagos used to be a perfect example of where this ugly trend was visible. However, the immediate past administration put a stop to that by creating

central motor parks and garages where vehicles can load and offload goods and passengers. Other states are trying to follow in the footsteps of Lagos; however, only Kwara, Benue, Niger and the FCT are getting it right. Until a city achieves this, there is no way it can be environment-friendly because the natural ecosystem of the city will be tampered with if every car can be parked everywhere and drivers can pick passengers in any part of the city. In fact, it is now a crime in Lagos State for any driver to park and pick passengers just anywhere in town.

Having explained the above in the mirror of the selected indicators, apart from Abuja, the Federal Capital Territory (FCT); only four state capitals, namely; Lagos Metropolis, Makurdi (Benue State Capital), Ilorin (Kwara State Capital) and Minna (Niger State Capital) made the cut. Kano, Ibadan and Port Harcourt though are part of the five metropolitan cities in Nigeria but could not make the cut because not all the criteria were met. The geographical location of cities that satisfy environment-friendliness criteria are presented in Fig. 4.



Fig. 1. Lagos waste management authority (LAWMA) and staff on duty
Source: lawma.lagstate.gov.ng



Fig. 2. LAWMA managing director at Lagos nylon recycling plant
Source: lawma.lagstate.gov.ng



Fig. 3. Bus rapid transit (BRT) loading ‘Lagosians’ at a bus stop in Lagos

Source: <https://www.google.com.ng/brt/bus&q=1057>

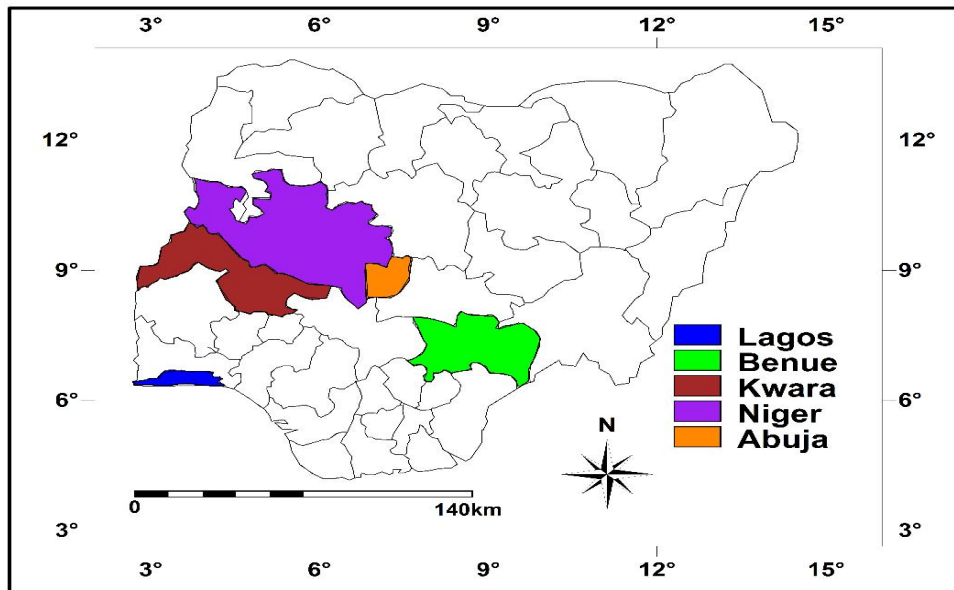


Fig. 4. Environment-friendly state capitals in Nigeria as at 2016

Source: Author's field work, 2016

From the foregoing, it implies that only 14 per cent of Nigeria capital cities, including FCT Abuja is environment-sensitive and friendly. One shocking but revealing feature of the above information is that only Lagos meets all the criteria from the supposed most-developed Southwestern region of Nigeria. All other four are surprisingly from the north-central. That may

perhaps be because of their proximity to the Federal Capital Territory (FCT), Abuja. Authors are of the opinion that it is a matter of political will by the ruling government and individual level of environmental consciousness of each incumbent governor and/or administration of each state that count. Other partially environment-friendly state capitals in southwestern Nigeria which met part

of the above criteria are Ibadan and Akure. Port Harcourt, Benin and Uyo in south-south also met some of the criteria. However, most state capitals in northern Nigeria meet only one or at most two of the criteria. Worst of all, state capitals like Ado-Ekiti, Ekiti State, Owerri, Imo State and Abeokuta, Ogun State still need to do more because they have a long way to go based on the criteria as they barely meet up to one of the criteria. Hence, the states that satisfied the described criteria are termed environment-friendly states while those that could not meet up are called otherwise.

6. CONCLUSION AND RECOMMENDATION

This paper examines the state of environmental management in Nigeria capital cities among others in order to ascertain their level of environment-friendliness. A very special feature is the unveiling of five research-proven environment-friendly indicators upon which the cities were placed for qualification. From statistics analysed, if the present growth rate remains unchanged; Kano, Lagos and Abuja will add approximately 18.3 million, 18.1 million and 3.3 million respectively to their present population by year 2050 as they all grow at an annual rate of 1.8 per cent. The question is what becomes of Nigeria state capitals if they all out-double their present population by year 2050 without adequate and corresponding provision of food, housing, road infrastructural and employment opportunities? Without any doubt; these cities will experience severe hunger, poverty, proliferation of slums, unbearable congestion, and environmental degradation. The following recommendations were outlined based on the findings from our analyses.

- i. Even Urban-Rural Development: This is because as rightly posit by [29] that the challenge of urban development is, without disputes, the challenge of the future. A practical solution to the challenge of urban growth is, on the other side of the coin, the empirical solution to the rural problems. It is the youth (labour force) who mostly migrate to urban areas with all high expectations of a better life. If rural life is made comfortable, affordable and convenient, rural-urban migration and consequently too rapid congestion, causing environmental degradation as we experience in Nigeria metropolitan cities today will reduce. Economic policies which

target urban areas alone for development are preserving bigger problems for such urban centres in the very near future if corresponding developmental policies are not applied to rural areas which house majority of 'mass-moving' manpower. This rural sticky economic policy only ends up forcing a mass exodus of people from rural areas to urban centres. Moreover, rural economy is not limited to farming. In this 21st century, other ingredients making up the entire rural economy include livestock production, forestry, fishing, marketing, hunting, services, manufacturing etc. Within this diversity of activities in the rural society, massive rural outmigration will definitely slow down because there is no reason travelling long to look for things that are available in your backyard.

- ii. Lastly, we strongly urge government, NGOs and other policy makers to make the five criteria a model for environmental cleanliness in their various locations. Further research can also be carried out to unearth more criteria but for now, policy makers should embrace these research-proven criteria as a monitor for major cities in Nigeria to manage their environment.

DISCLAIMER

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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